Data Sheet

Cisco 2800 Series Integrated Services Routers

Cisco Systems®, Inc. is redefining best-in-class enterprise and small- to- midsize business routing with a new line of integrated services routers that are optimized for the secure, wire-speed delivery of concurrent data, voice, video, and wireless services. Founded on 20 years of leadership and innovation, the Cisco® 2800 Series of integrated services routers (refer to Figure 1) intelligently embed data, security, voice, and wireless services into a single, resilient system for fast, scalable delivery of mission-critical business applications. The unique integrated systems architecture of the Cisco 2800 Series delivers maximum business agility and investment protection.

Figure 1. Cisco 2800 Series

PRODUCT OVERVIEW

The Cisco 2800 Series comprises four platforms (refer to Figure 1): the Cisco 2801, the Cisco 2811, the Cisco 2821, and the Cisco 2851. The Cisco 2800 Series provides significant additional value compared to prior generations of Cisco routers at similar price points by offering up to a fivefold performance improvement, up to a tenfold increase in security and voice performance, embedded service options, and dramatically increased slot performance and density while maintaining support for most of the more than 90 existing modules that are available today for the Cisco 1700, Cisco 2600, and Cisco 3700 Series.

The Cisco 2800 Series features the ability to deliver multiple high-quality simultaneous services at wire speed up to multiple T1/E1/xDSL connections. The routers offer embedded encryption acceleration and on the motherboard voice digital-signal-processor (DSP) slots; intrusion prevention system (IPS) and firewall functions; optional integrated call processing and voice mail support; high-density interfaces for a wide range of wired and wireless connectivity requirements; and sufficient performance and slot density for future network expansion requirements and advanced applications.

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SECURE NETWORK CONNECTIVITY FOR DATA, VOICE, AND VIDEO

Security has become a fundamental building block of any network. Routers play an important role in any network defense strategy because security needs to be embedded throughout the network. The Cisco 2800 Series features advanced, integrated, end-to-end security for the delivery of converged services and applications. With the Cisco IOS® Software Advanced Security feature set, the Cisco 2800 provides a robust array of common security features such as a Cisco IOS Software Firewall, intrusion prevention, IPSec VPN, advanced application inspection and control, Secure Shell (SSH) Protocol Version 2.0, and Simple Network Management Protocol (SNMPv3) in one secure solution set. Additionally, by integrating security functions directly into the router itself, Cisco can provide unique intelligent security solutions other security devices cannot, such as network admissions control (NAC) for antivirus defense; Voice and Video Enabled VPN (V3PN) for quality-of-service (QoS) enforcement when combining voice, video, and VPN; and Dynamic Multipoint VPN (DMVPN) and Easy VPN for enabling more scalable and manageable VPN networks. In addition, Cisco offers a range of security acceleration hardware such as the intrusion-prevention network modules and advanced integration modules (AIM) for encryption, making the Cisco 2800 Series the industry's most robust and adaptable security solution available for branch offices. As Figure 2 demonstrates, using a Cisco 2800 Series uniquely enables customers to deliver concurrent, mission-critical data, voice, and video applications with integrated, end-to-end security at wire-speed performance.

CONVERGED IP COMMUNICATIONS

As shown in Figure 2, the Cisco 2800 Series can meet the IP Communications needs of small-to-medium sized business and enterprise branch offices while concurrently delivering an industry-leading level of security within a single routing platform. Cisco CallManager Express (CME) is an optional solution embedded in Cisco IOS Software that provides call processing for Cisco IP phones, including wired and cordless WLAN phones. This solution is for customers with data-connectivity requirements interested in deploying a converged IP telephony solution for up to 72 IP phones and-as of Cisco IOS 12.3(11)T release-for up to 96 IP phones. With the Cisco 2800 Series, customers can securely deploy data, voice, and IP telephony on a single platform for their small-to-medium sized branch offices, helping them to streamline their operations and lower their network costs. The Cisco 2800 Series with optional Cisco CME support offers a core set of phone features that customers require for their everyday business needs and takes advantage of the wide array of voice capabilities that are embedded in the Cisco 2800 Series (as shown in Table 1) together with optional features available in Cisco IOS Software to provide a robust IP telephony offering for the small to medium-sized branch-office environment.

WIRELESS SERVICES

The Cisco 2800 Series can provide a complete wireless solution for branch offices, small/medium sized businesses, and Wi-Fi hotspots. Wireless services enable greater mobility for employees, partners, and customers, resulting in increased productivity. The Cisco 2800 Series supports an integrated access point for wireless LAN connectivity, Wi-Fi Hotspot services for public access, wireless infrastructure services for cordless WLAN telephony and for larger sites, and land mobile radio over IP for radio users.

INTEGRATED SERVICES

Figure 2 also highlights the fact that with the unique integrated services architecture of the Cisco 2800 Series, customers can now securely deploy IP Communications with traditional IP routing while leaving interface and module slots available for additional advanced services. With the optional integration of a wide array of services modules, the Cisco 2800 Series offers the ability to easily integrate the functions of standalone network appliances and components into the Cisco 2800 Series chassis itself. Many of these modules, such as the Cisco Network Analysis Module, Cisco Voice Mail Module, Cisco Intrusion Detection Module, and Cisco Content Engine Module, have embedded processors and hard drives that allow them to run largely independently of the router while allowing management from a single management interface. This flexibility greatly expands the potential applications of the Cisco 2800 Series beyond traditional routing while still maintaining the benefits of integration. These benefits include ease of management, lower solution costs (CAPEX and OPEX), and increased speed of deployment.

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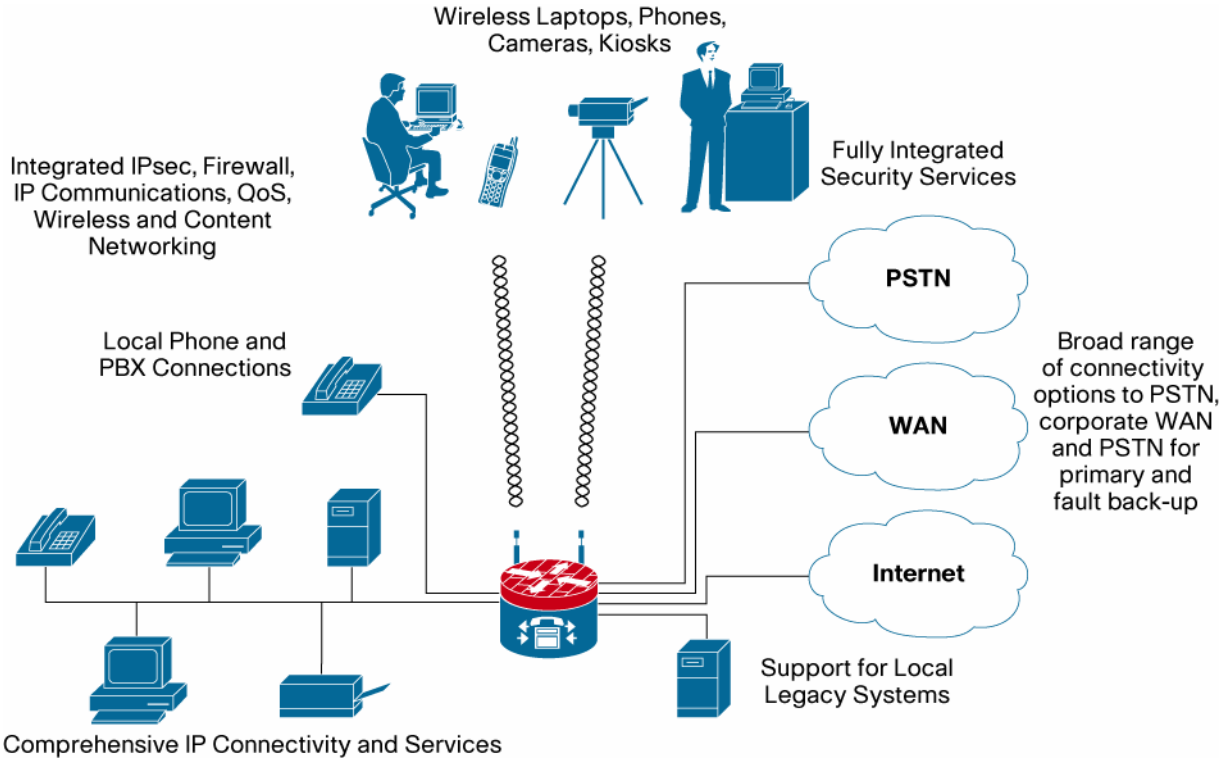
APPLICATIONS

Secure Network Connectivity with Converged IP Communications

Figure 2. Secure Network Connectivity with Converged IP Communications



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Architecture—Features and Benefits

The Cisco 2800 Series architecture has been designed specifically to meet the expanding requirements of enterprise branch offices and small-to-medium-sized businesses for today's and future applications. The Cisco 2800 Series provides the broadest range of connectivity options in the industry combined with leading-edge availability and reliability features. In addition, Cisco IOS Software provides support for a complete suite of transport protocols, Quality-of-Service (QoS) tools, and advanced security and voice applications for wired and wireless deployments.

Table 1. Architecture—Features and Benefits

Feature	Benefit
Modular Architecture	• A wide variety of LAN and WAN options are available. Network interfaces can be upgraded in the field to accommodate future technologies. • Several types of slots are available to add connectivity and services in the future on an "integrate-as-you-grow" basis. • The Cisco 2800 supports more than 90 modules, including most of the existing WICs, VICs, network modules, and AIMs (Note: the Cisco 2801 router does not support network modules).
Embedded Security Hardware Acceleration	• Each of the Cisco 2800 Series routers comes standard with embedded hardware cryptography accelerators, which when combined with an optional Cisco IOS Software upgrade help enable WAN link security and VPN services.
Increased Default Memory	• The Cisco 2811, 2821, and 2851 Routers offer 64 MB of Flash and 256 MB of DRAM memory. • The Cisco 2801 router comes with 64 MB Flash and 128 MB DRAM memory.
Integrated Dual Fast Ethernet or Gigabit Ethernet Ports	• The Cisco 2800 Series provide two 10/100 on the Cisco 2801 and Cisco 2811 and two 10/100/1000 on the Cisco 2821 and Cisco 2851
Support for Cisco IOS Software Release 12.3T Feature Sets	• The Cisco 2800 helps enable end-to-end solutions with full support for the latest Cisco IOS Software-based QoS, bandwidth management, and security features. • Common feature and command set structure across the Cisco 1700, 1800, 2600, 2800, 3700 and 3800 series routers simplifies feature set selection, deployment, management, and training.
Optional Integrated Power Supply for Distribution of Power Over Ethernet (PoE)	• An optional upgrade to the internal power supply provides in-line power (802.3af-compliant Power-over-Ethernet [PoE] and Cisco standard inline power) to optional integrated switch modules.
Optional Integrated Universal DC Power Supply	• On the Cisco 2811, 2821, and 2851 routers an optional DC power supply is available that extends possible deployments environments such as central offices and industrial environments (Note: not available on the Cisco 2801).
Integrated Redundant-Power-Supply (RPS) Connector	• On the Cisco 2811, 2821, and 2851 there is a built in external power-supply connector that eases the addition of external redundant power supply that can be shared with other Cisco products to decrease network downtime by protecting the network components from downtime due to power failures.

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Modularity—Features and Benefits

The Cisco 2800 Series provides significantly enhanced modular capabilities (refer to Table 2) while maintaining investment protection for customers. The modular architecture has been redesigned to support increasing bandwidth requirements, time-division multiplexing (TDM) interconnections, and fully integrated power distribution to modules supporting 802.3af PoE or Cisco in-line power, while still supporting most existing modules. With more than 90 modules shared with other Cisco routers such as the Cisco 1700, 1800, 2600, 3700, and 3800 series, interfaces for the Cisco 2800 Series can easily be interchanged with other Cisco routers to provide maximum investment protection in the case of network upgrades. In addition, taking advantage of common interface cards across a network greatly reduces the complexity of managing inventory requirements, implementing large network rollouts, and maintaining configurations across a variety of branch-office sizes.

Table 2. Modularity—Features and Benefits

Feature	Benefit
Enhanced Network-Module (NME) Slots	• The NME slots support existing network modules (Note: NM and NME support on Cisco 2811, 2821, and 2851 only) • NME Slots offer high data throughput capability (up to 1.6Gbps) and support for Power over Ethernet (POE). • NME slots are highly flexible with future support for extended NMEs (NME-X on Cisco 2821 and 2851 only) and enhanced double-wide NMEs (NME-XDs) (Note: Cisco 2851 only).
High-Performance WIC (HWIC) Slots with Enhanced Functionality	• Four integrated HWIC slots on Cisco 2811, 2821, and 2851 and two integrated HWIC slots on Cisco 2801 allow for more flexible and dense configurations. • HWICs slots can also support WICs, VICs, and VWICs • HWIC slots offer high data throughput capability (up to 400 Mbps half duplex or 800 Mbps aggregate throughput) and Power over Ethernet (POE) support. • A flexible form factor supports up to two double-wide HWIC (HWIC-D) modules.
Dual AIM Slots	• Dual AIM slots support concurrent services such as hardware-accelerated security, ATM segmentation and reassembly (SAR), compression, and voice mail (Refer to Table 7 for more details on specific platform support).
Packet Voice DSP Module (PVDM) Slots on Motherboard	• Slots for Cisco PVDM2 Modules (DSP Modules) are integrated on the motherboard, freeing slots on the router for other services.
Extension-Voice-Module (EVM) Slot	• The EVM supports additional voice services and density without consuming the network-module slot (Note: available only on Cisco 2821 and 2851).
USB Support	• Up to two USB ports are available per Cisco 2800 series router. The routers' Universal Serial Bus (USB) ports enable important security and storage capabilities.

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Secure Networking—Feature and Benefits

The Cisco 2800 Series features enhanced security functionality as shown in Table 3. Integrated on the motherboard of every Cisco 2800 Series router is hardware-based encryption acceleration that offloads the encryption processes to provide greater IPSec throughput with less overhead for the router CPU when compared with software-based solutions. With the integration of optional VPN modules (for enhanced VPN tunnel count), Cisco IOS Software-based firewall, network access control, or content-engine network modules, Cisco offers the industry's most robust and adaptable security solution for branch-office routers.

Table 3. Secure Networking—Feature and Benefits

Feature	Benefit
Cisco IOS Software Firewall	• Sophisticated security and policy enforcement provides features such as stateful, application-based filtering (context-based access control), per-user authentication and authorization, real-time alerts, transparent firewall, and IPv6 firewall.
Onboard VPN Encryption Acceleration	• The Cisco 2800 Series supports IPSec Digital Encryption Standard (DES), Triple DES (3DES), Advanced Encryption Standard (AES) 128, AES 192, and AES 256 cryptology without consuming an AIM slot.
Network Admissions Control (NAC)	• A Cisco Self-Defending Network initiative, NAC seeks to dramatically improve the ability of networks to identify, prevent, and adapt to threats by allowing network access only to compliant and trusted endpoint devices.
Multiprotocol Label Switching (MPLS) VPN Support	• The Cisco 2800 Series supports specific provider edge functions plus a mechanism to extend customers' MPLS VPN networks out to the customer edge with virtual routing and forwarding (VRF) firewall and VRF IPSec. For details on the MPLS VPN support on the different versions of the Cisco 2800 Series, please check the feature navigator tool on http://www.cisco.com.
USB eToken Support	• USB eTokens from Aladdin Knowledge Systems (available at http://www.aladdin.com/etoken/cisco/) provides secure configuration distribution and allows users to store VPN credentials for deployment
AIM-Based Security Acceleration	• Support for an optional dedicated security AIM can deliver 2 to 3 times the performance of embedded encryption capabilities with Layer 3 compression.
Intrusion Prevention System (IPS)	• Flexible and high performance support is offered through Cisco IOS® Software or an intrusion-detection-system (IDS) network module. • The ability to load and enable selected IDS signatures in the same manner as Cisco IDS Sensor Appliances
Advanced Application Inspection and Control	• Cisco IOS Firewall includes HTTP and several email inspection engines that can be used to detect misuse of port 80 and email connectivity.
Cisco Easy VPN Remote and Server Support	• The Cisco 2800 Series eases administration and management of point-to-point VPNs by actively pushing new security policies from a single headend to remote sites.
Dynamic Multipoint VPN (DMVPN)	• DMVPN is a Cisco IOS Software solution for building IPSec + generic routing encapsulation (GRE) VPNs in an easy and scalable manner.
URL Filtering	• URL filtering is available onboard with an optional content-engine network module or external with a PC server running the URL filtering software.
Cisco Router and Security Device Manager (SDM)	• This intuitive, easy-to-use, Web-based device-management tool is embedded within the Cisco IOS Software access routers; it can be accessed remotely for faster and easier deployment of Cisco routers for both WAN access and security features.

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IP Telephony Support—Features and Benefits

The Cisco 2800 Series allows network managers to provide scalable analog and digital telephony without investing in a one-time solution (refer to Table 4 for more detail), allowing enterprises greater control of their converged telephony needs. Using the voice and fax modules, the Cisco 2800 Series can be deployed for applications ranging from voice-over-IP (VoIP) and voice-over-Frame Relay (VoFR) transport to robust, centralized solutions using the Cisco Survivable Remote Site Telephony (SRST) solution or distributed call processing using Cisco Call Manager Express (CME). The architecture is highly scalable with the ability to connect up to 12 T1/E1s trunks, 52 foreign-exchange-station (FXS) ports, or 36 foreign-exchange-office (FXO) ports.

Table 4. IP Telephony Support—Features and Benefits

Feature	Benefit
IP Phone Support	• Optional support for Cisco in-line power distribution to Ethernet switch network modules and HWICs can be used to power Cisco IP phones.
EVM Module Slots	• Extension Voice Module Slots, available only on the Cisco 2821 and Cisco 2851, provide support for the Cisco High-Density Analog and Digital Extension Module for Voice and Fax, providing support for up to 24 total voice and fax sessions without consuming a Network Module Slot.
PVDM (DSP) Slots on Motherboard	• DSP (PVDM2) modules deliver support for analog and digital voice, conferencing, transcoding, and secure Real-Time Transport Protocol (RTP) applications.
Integrated Call Processing	• Cisco CME is an optional solution embedded in Cisco IOS Software that provides call processing for Cisco IP phones. Cisco CME delivers telephony features similar to those that are commonly used by business users to meet the requirements of the small to medium-sized offices.
Integrated Voice Mail	• Support for up to a 100 mailboxes using the Cisco Unity® Express voice messaging system is possible with the integration of an optional voice-mail AIM or network module.
Broad Range of Voice Interfaces	• Interfaces for public switched telephone network (PSTN), private branch exchange (PBX), and key system connections include FXS; FXO; analog direct inward dialing (DID); ear and mouth (E&M); Centralized Automated Message Accounting (CAMA); ISDN Basic Rate Interface (BRI); and T1, E1, and J1 with ISDN Primary Rate Interface (PRI); QSIG; E1 R2; and several additional channel-associated-signaling (CAS) signaling schemes.
Survivable Remote Site Telephony (SRST)	• Branch offices can take advantage of centralized call control while cost-effectively providing local branch backup using SRST redundancy for IP telephony.

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Wireless Support—Features and Benefits

The Cisco 2800 Series can provide a complete wireless solution for branch offices, small/medium sized businesses, and Wi-Fi hotspots. Wireless services enable greater mobility for employees, partners, and customers, resulting in increased productivity.

Table 5. Wireless Support-Features and Benefits

Feature	Benefit
WLAN Connectivity	• The 802.11b/g or 802.11a/b/g HWIC access point interface card can be used to provide integrated WLAN connectivity to mobile clients at sites requiring a single access point, resulting in mobility and enhanced productivity for users. • Dual RP-TNC connectors enable diversity and allow for optimum coverage through the use of external antennas.
Wireless Infrastructure Services	• Telephony support for wired and WLAN IP phones is delivered by Cisco CallManager Express (CCME) or by Survivable Remote Site Telephony (SRST) with Cisco CallManager. Cordless WLAN IP phones allow users to be mobile and more productive. • Integrated switch modules with Power over Ethernet (POE) enable support for Cisco Aironet access points (for larger sites) as well as wired IP phones. • Mobility for clients from WLAN to cellular networks is enabled by Mobile IP home agent support. • IEEE 802.1x local authentication using LEAP provides enhanced reliability through survivable authentication for WLAN clients during WAN failures. • Customizable guest access is enabled with the service selection gateway features, along with the Subscriber Edge Services Manager.
Land Mobile Radio Over IP	• LMR over IP support allows radio users (e.g., security personnel, maintenance personnel, police officers, etc.) to communicate via IP with phone and PC users, delivering improved communications and productivity.
Wi-Fi Hotspot Services	• The access zone router and service selection gateway services features can be used to deploy secure public WLAN access services with an integrated HWIC-AP for small sites or with Cisco Aironet access points for larger sites. Wi-Fi hotspot services can be offered for additional revenue for public locations (e.g., restaurants, hotels, airports, etc.) or a value-added service for customer satisfaction.

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Cost of Ownership and Ease of Use—Features and Benefits

The Cisco 2800 Series continues the heritage of offering versatility, integration, and power to branch offices. The Cisco 2800 Series offers many enhancements to help enable the support of multiple services in the branch office as shown in the table below..

Table 6. Cost of Ownership and Ease of Use—Feature and Benefits

Feature	Benefit
Integrated Channel Service Unit/Data Service Unit (CSU/DSU), Add/Drop Multiplexers, Firewall, Modem, Compression, and Encryption	• Consolidates typical communications equipment found in branch-office wiring closets into a single, compact unit; this space-saving solution provides better manageability
Optional Network Analysis Module	• Provides application-level visibility into network traffic for troubleshooting, performance monitoring, capacity planning, and managing network-based services (Note: Cisco 2811, 2821, and 2851 only)
Cisco IOS Software Warm Reboot	• Reduces system boot time, and decreases downtime caused by Cisco IOS Software reboots (Cisco 2811, 2821 and 2851)
Enhanced Setup Feature	• Optional setup wizard with context-sensitive questions guides the user through the router configuration process, allowing faster deployment
CiscoWorks Support	• Offers advanced management and configuration capabilities through a Web-based GUI
Cisco AutoInstall	• Configures remote routers automatically across a WAN connection to save cost of sending technical staff to the remote site

SUMMARY AND CONCLUSION

As companies strive to lower the cost of running their network and increase the productivity of their end users with network applications, more intelligent branch-office solutions are required. The Cisco 2800 Series offers these solutions by providing enhanced performance and increased modular density to support multiple services at wire speed. The Cisco 2800 Series is designed to consolidate the functions of many separate devices into a single, compact package that can be managed remotely. Because the Cisco 2800 Series routers are modular devices, interface configurations are easily customized to accommodate a wide variety of network applications, such as branch-office data access, integrated switching, voice and data integration, wireless LAN services, dial access services, VPN access and firewall protection, business-class DSL, content networking, intrusion prevention, inter-VLAN routing, and serial device concentration. The Cisco 2800 Series provides customers with the industry's most flexible, adaptable infrastructure to meet both today's and tomorrow's business requirements for maximum investment protection.

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PRODUCT SPECIFICATIONS

Table 7. Chassis Specifications

Cisco 2800 Series	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Product Architecture				
DRAM	• Default: 128 MB • Maximum: 384 MB	• Default: 256 MB • Maximum: 768 MB	• Default: 256 MB • Maximum: 1 GB	
Compact Flash	• Default: 64 MB • Maximum: 128MB	• Default: 64 MB • Maximum: 256 MB		
Fixed USB 1.1 Ports	1	2		
Onboard LAN Ports	2-10/100		2-10/100/1000	
Onboard AIM (Internal) Slot	2			
Interface Card Slots	• 4 slots; 2 slots support HWIC, WIC, VIC, or VWIC type modules • 1 slot supports WIC, VIC, or VWIC type modules • 1 slot supports VIC or VWIC type modules	4 slots, each slot can support HWIC, WIC, VIC, or VWIC type modules		
Network-Module Slot	No	1 slot, supports NM and NME type modules	1 slot, supports NM, NME and NME-X type modules	1 slot, supports NM, NME, NME-X, NMD and NME-XD type modules
Extension Voice Module Slot	0		1	
PVDM (DSP) Slots on Motherboard	2		3	
Integrated Hardware-Based Encryption	Yes			
VPN Hardware Acceleration (on Motherboard)	DES, 3DES, AES 128, AES 192, and AES 256			
Optional Integrated In-Line Power (PoE)	Yes, requires AC-IP power supply			
Console Port (up to 115.2 kbps)	1			
Auxiliary Port (up to 115.2 kbps)	1			
Minimum Cisco IOS Software Release	12.3(8)T			
Rack Mounting	Yes, 19-inch	Yes, 19- and 23-in. options		
Wall Mounting	No	Yes	No	No

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Cisco 2800 Series	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Power Requirements				
AC Input Voltage	100 to 240 VAC, autoranging			
AC Input Frequency	47-63 Hz			
AC Input Current	2A (110V) 1A (230V)		3A (110V) 2A (230V)	
AC Input Surge Current	50A maximum, one cycle (-48V power included)			
AC-IP Maximum In-Line Power Distribution	120W	160W	240W	360W
AC-IP Input Current	4A (110V) 2A (230V)		8A (110V) 4A (230V)	
AC-IP Input Surge Current	50A maximum, one cycle (-48V power included)			
DC Input Voltage	No DC Power Option available	24 to 60 VDC, autoranging positive or negative		
DC Input Current	No DC Power Option available	• 8A (24V) • 3A (60V) • Startup current 50A<10 ms	• 12A (24V) • 5A (60V) • Startup current 50A<10 ms	
Power Dissipation-AC without IP Phone Support	150W (511 BTU/hr)	170W (580 BTU/hr)	280W (955 BTU/hr)	280W (955 BTU/hr)
Power Dissipation-AC with IP Phone Support-System Only	150W (511 BTU/hr)	210W (717 BTU/hr)	310W (1058 BTU/hr)	370W (1262 BTU/hr)
Power Dissipation-AC with IP Phone Support-IP Phones	180W (612 BTU/hr)	160W (546 BTU/hr)	240W (819 BTU/hr)	360W (1128 BTU/hr)
Power Dissipation-DC	Not applicable	180W (614 BTU/hr)	300W (1024 BTU/hr)	300W (1024 BTU/hr)
RPS	No	External only, connector for RPS provided by default		
Recommended RPS Unit	No RPS option	Cisco RPS-675 Redundant Power System		
Environmental Specifications				
Operating Temperature	32 to 104°F (0 to 40°C)			
Operating Humidity	10 to 85% non-condensing	5 to 95%, non-condensing		
Non-Operating Temperature	–	4° to 149°F (-20° to 65°C)		
Operation Altitude	• 25°C @ 3 km/10 kft • 40°C @ sea level	• 27.5°C @ 15 kft • 35°C @ 3km/10 kft • 40°C @ sea level		
Dimensions (H x W x D)	• 1.72 x 17.5 x 16.5 in. • (43.7 x 445 x 419 mm)	• 1.75 x 17.25 x 16.4 in. • (44.5 x 438.2 x 416.6 mm)	• 3.5 x 17.25 x 16.4 in. • (88.9 x 438.2 x 416.6 mm)	
Rack Height	1 rack unit (1RU)		2RU	
Weight (Fully Configured)	13.7 lb (6.2 kg)	14 lb (6.4 kg)	25 lb (11.4 kg)	

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Cisco 2800 Series	Cisco 2801	Cisco 2811	Cisco 2821 Cisco 2851
Noise Level (Min/Max)	• 39 dBA for normal operating temperature (<90°F/32.2°C) • 53.5 dBA (@ maximum fan speed)	• 47 dBA for normal operating temperature (<90°F/32.2°C) • 57 dBA (@ maximum fan speed)	• 44 dBA for normal operating temperature (<90°F/32.2°C) • 53 dBA (@ maximum fan speed)
Regulatory Compliance			
NEBS	Yes	Yes	Yes
Safety	• UL 60950 • CAN/CSA C22.2 No. 60950 • IEC 60950 • EN 60950-1 • AS/NZS 60950		
Immunity	• EN300386 • EN55024/CISPR24 • EN50082-1 • EN61000-6-2		
EMC	• FCC Part 15 • ICES-003 Class A • EN55022 Class A • CISPR22 Class A • AS/NZS 3548 Class A • VCCI Class A • EN 300386 • EN61000-3-3 • EN61000-3-2		
FIPS-2	FIPS 140-2 Certification for 2801, 2811, 2821, 2851		
TELCOM**	For all four platforms, Telecom compliance standards depend upon country and interface type. Interfaces comply with FCC Part 68, CS-03, JATE Technical Conditions, European Directive 99/5/EC and relevant TBR's. For specific information see the datasheet for the specific interface card. Homologation requirements vary by country and interface type. For specific country information, see the on-line approvals data base: http://tools.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&page=EXTERNAL_SEARCH&module=EXTERNAL_SEARCH		

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MODULAR SUPPORT

Table 8. Modules and Interface Cards Supported

Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Ethernet Switching Network Modules					
NME-16ES-1G	One 16-port 10/100 EtherSwitch service module, 1 10/100/1000 port, and IP Base	No	X	X	X
NME-16ES-1G-P	One 16-port 10/100 Cisco EtherSwitch service module with802.3af, 1 10/100/1000 port, and IP Base	No	X	X	X
NME-X-23ES-1G	One 23-port 10/100 EtherSwitch service module, 1 10/100/1000 port, and IP Base	No	No	X	X
NME-X-23ES-1G-P	One 23-port 10/100 Cisco EtherSwitch service module with802.3af, 1 10/100/1000 port with 802.3af, and IP Base	No	No	X	X
NME-XD-24ES-2S-P	One 24-port 10/100 Cisco EtherSwitch service module with802.3af, 1 SFP, Cisco StackWise connectors, and IP Base	No	No	No	X
NME-XD-48ES-2S-P	One 48-port 10/100 Cisco EtherSwitch service module with 802.3af, 2 SFPs, and IP Base	No	No	No	X
NM-16ESW	16-port 10/100 Cisco EtherSwitch® Network Module	No	X	X	X
NM-16ESW-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with 1 Gigabit Ethernet (1000BASE-T) port	No	X	X	X
NM-16ESW-PWR	16-port 10/100 Cisco EtherSwitch Network Module with in-line power support	No	X	X	X
NM-16ESW-PWR-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with in-line power and Gigabit Ethernet	No	X	X	X
NMD-36ESW	36-port 10/100 Cisco EtherSwitch High-Density Services Module (HDSM)	No	No	No	X
NMD-36ESW-2GIG	36-port 10/100 Cisco EtherSwitch HDSM with 1 Gigabit Ethernet (1000BASE-T) port	No	No	No	X
NMD-36ESW-PWR	36-port 10/100 Cisco EtherSwitch HDSM with in-line power support	No	No	No	X
NMD-36ESW-PWR-2G	36-port 10/100 Cisco EtherSwitch HDSM with in-line power and Gigabit Ethernet	No	No	No	X
Serial Connectivity Network Modules					
NM-1T3/E3	1-port clear-channel T3/E3 network module	No	X	X	X
NM-1HSSI	1-port High-Speed Serial Interface (HSSI) network module	No	X	X	X
NM-4A/S	4-port asynchronous/synchronous serial network module	No	X	X	X
NM-8A/S	8-port asynchronous/synchronous serial network module	No	X	X	X

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Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
NM-16A/S	16-port asynchronous/synchronous serial network nodule	No	X	X	X
NM-16A	16-port asynchronous serial network module	No	X	X	X
NM-32A	32-port asynchronous serial network module	No	X	X	X
Channelized T1/E1 and ISDN Network Modules					
NM-1CE1T1-PRI	1-port Channelized E1/T1/ISDN PRI network module	No	X	X	X
NM-2CE1T1-PRI	2-port Channelized E1/T1/ISDN PRI network module	No	X	X	X
NM-4B-S/T	4-port ISDN BRI network module (S/T interface)	No	X	X	X
NM-4B-U	4-port ISDN BRI network module with integrated Network Termination 1 (NT1) (U interface)	No	X	X	X
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)	No	X	X	X
NM-8B-U	8-port ISDN BRI network module with integrated NT1 (U interface)	No	X	X	X
ATM Network Modules					
NM-1A-T3	1-port DS-3 ATM network module	No	X	X	X
NM-1A-E3	1-port E3 ATM network module	No	X	X	X
Analog Dialup and Remote Access Network Modules					
NM-8AM-V2	8-port analog modem network module with v.92	No	X	X	X
NM-16AM-V2	16-port analog modem network module with v.92	No	X	X	X
Voice Network Modules and Accessories					
NM-HD-1V	1-slot IP Communications voice and fax network module	No	X	X	X
NM-HD-2V	2-slot IP Communications voice and fax network module	No	X	X	X
NM-HD-2VE	2-slot IP Communications enhanced voice and fax network module	No	X	X	X
NM-HDA-4FXS	High-density analog voice and fax network module with 4 FXS slots	No	X	X	X
NM-HDV2	IP Communications high-density voice and fax network module	No	X	X	X
NM-HDV2-1T1/E1	1-port T1/E1 IP Communications high-density voice and fax network module	No	X	X	X
NM-HDV2-2T1/E1	2-port T1/E1 IP Communications high-density voice and fax network module	No	X	X	X
NM-HDV=	High Density Voice/Fax Network Module (Single VIC Slot)	No	X	X	X
NM-HDV-1T1-12	1-port 12-channel T1 voice and fax network module	No	X	X	X
NM-HDV-1T1-24	1-port 24-channel T1 voice and fax network module	No	X	X	X
NM-HDV-1T1-24E	Single-port 24 enhanced channel T1 voice and fax network module	No	X	X	X

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Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
NM-HDV-2T1-48	2-port 48-channel T1 voice and fax network module	No	X	X	X
NM-HDV-1E1-12	1-port 12-channel E1 voice and fax network module	No	X	X	X
NM-HDV-1E1-30	1-port 30-channel E1 voice and fax network module	No	X	X	X
NM-HDV-1E1-30E	1-port 30-enhanced-channel E1 voice and fax Network Module	No	X	X	X
NM-HDV-2E1-60	2-port 60-channel E1 voice and fax network module	No	X	X	X
NM-HDV-1J1-30	1-port 30-channel J1 high-density voice network module	No	X	X	X
NM-HDV-1J1-30E	1-port 30-enhanced-channel J1 high-density voice network module	No	X	X	X
NM-HDV-FARM-C36	36-port transcoding and conferencing DSP farm	No	X	X	X
NM-HDV-FARM-C54	54-port transcoding and conferencing DSP farm	No	X	X	X
NM-HDV-FARM-C90	90-port transcoding and conferencing DSP farm	No	X	X	X
Application Network Modules					
NM-CE-BP-40G-K9	Cisco Content Engine Network Module, basic performance, 40-GB IDE hard disk	No	X	X	X
NM-CE-BP-80G-K9	Cisco Content Engine Network Module, basic performance, 80-GB IDE hard disk	No	X	X	X
NM-CE-BP-40G-S-K9	Cisco Content Engine Network Module for Security, basic performance, 40-GB IDE hard disk	No	Check	Check	check
NM-CE-BP-80G-S-K9	Cisco Content Engine Network Module for Security, basic performance, 80-GB IDE hard disk	No	Check	Check	check
NM-CIDS-K9	Cisco IDS Network Module	No	X	X	X
NM-CUE	Cisco Unity Express Voice-Mail Network Module	No	X	X	X
NM-CUE-EC	Cisco Unity Express Voice-Mail Network Module extended capacity	No	X	X	X
NM-NAM	Cisco 2600, 3660, and 3700 series network analysis module	No	X	X	X
Alarm Monitoring and Control Network Modules and Accessories					
NM-AIC-64	Alarm monitoring and control network module	No	X	X	X
Circuit Emulation over IP (CEoIP) Network Modules					
NM-CEM-4SER	4-port serial Circuit Emulation over IP (CEoIP) network module	No	X	X	X
NM-CEM-4TE1	4-port T1/E1 Circuit Emulation over IP (CEoIP) network module	No	X	X	X
Satellite Module					
NM-1VSAT-GILAT	Cisco IP VSAT Satellite WAN Network Module	No	Check	Check	check
Extension Voice Modules					
EVM-HD-8FXS/DID	High density voice/fax extension module -8 FXS/DID	No	No	X	X

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Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
INTERFACE-CARD SUPPORT					
Ethernet Switching HWICs					
HWIC-4ESW	4-port single-wide 10/100BaseT Ethernet switch HWIC	X	X	X	X
HWIC-D-9ESW	9-port double-wide 10/100BaseT Ethernet switch HWIC	X	X	X	X
HWIC-4ESW-POE	4-port Ethernet switch HWIC, Power over Ethernet capable	X	X	X	X
HWIC-D-9-ESW-POE	9-port Ethernet switch HWIC, Power over Ethernet capable	X	X	X	X
Gigabit Ethernet HWICs					
HWIC-1GE-SFP	No	X	X	X	
Wireless HWICs					
HWIC-AP-G-A **HWIC-AP-G-E** **HWIC-AP-G-J**	802.11b/g HWIC access point interface card (A-Americas; E-Europe; J-Japan)	X	X	X	X
HWIC-AP-AG-A **HWIC-AP-AG-E** **HWIC-AP-AG-J**	802.11a/b/g HWIC access point interface card (A-Americas; E-Europe; J-Japan)	X	X	X	X
Serial HWIC/WICs					
WIC-1T	1-port high-speed serial WIC	X	X	X	X
WIC-2T	2-port high-speed serial WIC	X	X	X	X
HWIC-4T	4-Port Serial HWIC	X	X	X	X
WIC-2A/S	2-port Asynch/Synch serial WIC	X	X	X	X
HWIC-4A/S	4-Port Async/Sync Serial HWIC	X	X	X	X
HWIC-8A/S-232	8-Port Async/Sync Serial HWIC, EIA-232	X	X	X	X
HWIC-8A	8-Port Async HWIC	X	X	X	X
HWIC-16A	16-Port Async HWIC	X	X	X	X
CSU/DSU WICs					
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 DSU/CSU WIC	X	X	X	X
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC	X	X	X	X
ISDN BRI WICs					
WIC-1B-U-V2	1-port ISDN BRI with integrated NT1 (U interface)	X	X	X	X
WIC-1B-S/T-V3	1-port ISDN BRI with S/T interface	X	X	X	X

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Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
DSL WAN Interface Cards					
WIC-1ADSL	1-port asymmetric DSL (ADSL) over POTS service WIC	X	X	X	X
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp WIC	X	X	X	X
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp WIC	X	X	X	X
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)	X	X	X	X
WIC-1SHDSL-V2	1-port G.shdsl WIC (two or four wire)	check	X	X	X
WIC-1SHDSL-V3	One port G.shdsl WIC with 4-wire support	Check	Check	Check	check
HWIC-1ADSL	1-port ADSLoPOTS HWIC	Check	Check	Check	check
HWIC-1ADSLI	1-port ADSLoISDN HWIC	Check	Check	Check	check
Analog Modem WICs					
WIC-1AM	1-port analog modem WIC	X	X	X	X
WIC-2AM	2-port analog modem WIC	X	X	X	X
T1, E1, and G.703 Multiflex Trunk Voice Cards and WICs					
VWIC2-1MFT-T1/E1	1-Port T1/E1 Voice/WAN with Drop & Insert	X	X	X	X
VWIC2-2MFT-T1/E1	2-Port T1/E1 Voice/WAN with Drop & Insert	X	X	X	X
VWIC2-1MFT-G703	1-Port T1/E1 Voice/WAN with D&I & unstructured E1 (G703)	X	X	X	X
VWIC2-2MFT-G703	2-Port T1/E1 Voice/WAN with D&I & unstructured E1 (G703)	X	X	X	X
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk-T1 with drop and insert	X	X	X	X
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk-T1	X	X	X	X
VWIC-1MFT-T1	1-port RJ-48 multiflex trunk-T1	X	X	X	X
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk-E1	X	X	X	X
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk-G.703	X	X	X	X
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk-E1	X	X	X	X
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk-E1 with drop and insert	X	X	X	X
VWIC-2MFT-G703	2-port RJ-48 multiflex trunk-G.703	X	X	X	X
VICs					
VIC2-2FXS	2-port VIC-FXS	X	X	X	X
VIC2-2FXO	2-port VIC-FXO (universal)	X	X	X	X
VIC2-4FXO	4-port VIC-FXO (universal)	X	X	X	X
VIC2-2E/M	2-port VIC-E&M	X	X	X	X
VIC2-2BRI-NT/TE	2-port VIC card-BRI (NT and TE)	X	X	X	X
VIC-2DID	2-port DID voice and fax interface card	X	X	X	X
VIC-1J1	1-port digital VIC (J1) for Japan	No	X	X	X
VIC-4FXS/DID	4-port FXS or DID VIC	X	X	X	X

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Network Module		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Advanced Integration Modules					
AIM-ATM	High-performance ATM SAR AIM	No	X	X	X
AIM-COMPR2-V2	Data compression AIM	No	X	X	X
AIM-CUE	Cisco Unity Express Voice-Mail AIM	X	X	X	X
AIM-VPN/EPII-PLUS	Enhanced-performance DES, 3DES, AES, and compression VPN encryption AIM	X	X	X	X
DSP (PVDM) Support on Motherboard Slots					
PVDM2-8	8-channel fax and voice DSP module	X	X	X	X
PVDM2-16	16-channel fax and voice DSP module	X	X	X	X
PVDM2-32	32-channel fax and voice DSP module	X	X	X	X
PVDM2-48	48-channel fax and voice DSP module	X	X	X	X
PVDM2-64	64-channel fax and voice DSP module	X	X	X	X
USB Flash Storage					
MEMUSB-64FT	64 Mb USB Flash	X	X	X	X
MEMUSB-128FT	128 Mb USB Flash	X	X	X	X
MEMUSB-256FT	256 Mb USB Flash	X	X	X	X

AVAILABILITY

The Cisco 2800 Series has been orderable since September, 2004, with first customer shipments at the end of September 2004.

ORDERING INFORMATION

To place an order, visit the Cisco Ordering Home Page.

Table 9. Ordering Information for Cisco 2800 Integrated Services Routers

Part Number	Product Name
CISCO2801	Integrated services router with AC power, 2FE, 4 Interface Card Slots, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2801-AC-IP	Integrated services router with AC power including power over ethernet distribution capability, 2FE, 4 Interface Card Slots, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811	Integrated services router with AC power, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811-AC-IP	Integrated services router with AC power including power over ethernet distribution capability, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811-DC	Integrated services router with DC power, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2821	Integrated services router with AC power, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2821-AC-IP	Integrated services router with AC power including power over ethernet distribution capability, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software

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Part Number	Product Name
CISCO2821-DC	Integrated services router with DC power, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851	Dual Gigabit Ethernet integrated services router with AC power, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851-AC-IP	Integrated services router with AC power including power over ethernet distribution capability, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851-DC	Integrated services router with DC power, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software

Also, check with your Cisco representative regarding security, xDSL, and voice bundles for the Cisco 2800 Series.

To download the software, visit the Cisco Software Center.

Table 10. Software Ordering Information

Part Number	Product Name	Supported Platform
S28IPB	Cisco 2800 IP Base	Cisco 2801
S28NIPBK9	Cisco 2800 IP Base K9	Cisco2801
S28IPV	Cisco 2800 IP Voice	Cisco 2801
S28NIPVK9	Cisco 2800 IP Voice K9	Cisco 2801
S28ASK9	Cisco 2800 Advanced Security K9	Cisco 2801
S28EB	Cisco 2800 Enterprise Base	Cisco 2801
S280EBK9	Cisco 2800 Enterprise Base K9	Cisco 2801
S28SPSK9	Cisco 2800 SP Services K9	Cisco 2801
S280ES	Cisco 2800 Enterprise Services without Crypto	Cisco 2801
S28ESK9	Cisco 2800 Enterprise Services K9	Cisco 2801
S28AISK9	Cisco 2800 Advanced IP Services K9	Cisco 2801
S28AESK9	Cisco 2800 Advanced Enterprise Services K9	Cisco 2801
S28NIPB	Cisco 2800 IP Base	Cisco 2811, 2821, 2851
S28NIPV	Cisco 2800 IP Voice	Cisco 2811, 2821, 2851
S28NIVS	Cisco 2800 Int Voice/Video: GK, IPIP GW, TDMIP GW	Cisco 2811, 2821, 2851
S28NAVSK9	Cisco 2800 Int Voice/Video: GK, IPIP. GW, TDMIP GW AES	Cisco 2811, 2821, 2851
S28NASK9	Cisco 2800 Advanced Security K9	Cisco 2811, 2821, 2851
S28NEB	Cisco 2800 Enterprise Base	Cisco 2811, 2821, 2851
S28NEBK9	Cisco 2800 Enterprise Base K9	Cisco 2811, 2821, 2851
S28NSPSK9	Cisco 2800 SP Services K9	Cisco 2811, 2821, 2851
S28NES	Cisco 2800 Enterprise Services	Cisco 2811, 2821, 2851
S28NESK9	Cisco 2800 Enterprise Services K9	Cisco 2811, 2821, 2851
S28NAISK9	Cisco 2800 Advanced IP Services K9	Cisco 2811, 2821, 2851

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Part Number	Product Name	Supported Platform
S28NAESK9	Cisco 2800 Advanced Enterprise Services K9	Cisco 2811, 2821, 2851
S28NSNAK9	Cisco 2800 Advanced Enterprise Services with SNA switching software	Cisco 2811, 2821, 2851

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FOR MORE INFORMATION

For more information about the Cisco 2800 Series, visit http://www.cisco.com/en/US/products/hwithrouters/ or contact your local account representative.

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